AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

We claim:

1.   (Currently amended) A method of detecting multipath components in time-varying fading radio channels (3, 4, 6) in a digital wireless communications system in which individual multipath components of a signal transmitted through a channel are received with individual delays (τ_a, τ_b, τ_c) within a range of possible delay values, and in which signals transmitted through a given channel comprise an identification code identifying that channel, the method comprising the steps of:

calculating repetitively for each of a number of known channels a delay profile indicating a magnitude (Y) for each of a number of individual delay values in a search window constituting a subset of said range of possible delay values and being positioned based on at least one previously calculated delay profile for the corresponding channel;

estimating from said delay profiles the delays of multipath components for each known channel;

calculating from said delay profiles a signal strength indicator for each known channel; and

searching at regular time intervals for new multipath components that are not already estimated from one of said delay profiles[[,]];

characterized in that the method further comprises the steps of:

comparing, when a new multipath component is found, the identification code of the new multipath component to the identification codes of said known channels; and

calculating, if the identification code of the new multipath component is identical to the identification code of one of the known channels, a delay profile and a corresponding signal strength indicator for a transposed window obtained by

transposing the search window of that known channel to include said new multipath component.

2.   (Currently amended) [[A]] The method according to claim 1, ~~characterized in that the method further comprises~~ further comprising the step of replacing the signal strength indicator calculated for that known channel by the signal strength indicator calculated for the transposed window.

3.   (Currently amended) [[A]] The method according to claim 2 ~~characterized in that the method further comprises~~ further comprising the step of replacing the search window for that known channel by the transposed window.

4.   (Currently amended) [[A]] The method according to claim 1, ~~characterized in that the method further comprises~~ further comprising the steps of:

comparing the signal strength indicator calculated for that known channel to the signal strength indicator calculated for the transposed window, and

replacing, if the signal strength indicator calculated for the transposed window is larger than the signal strength indicator calculated for that known channel multiplied by a factor, the signal strength indicator for that known channel by the signal strength indicator for the transposed window.

5.   (Currently amended) [[A]] The method according to claim 4, ~~characterized in that said~~ wherein the factor equals one.

6.   (Currently amended) [[A]] The method according to claim 4, ~~or 5, characterized in that the method further comprises~~ further comprising the step of replacing, if the signal strength indicator for that known channel is replaced by the signal strength indicator for the transposed window, the search window for that known channel by the transposed window.

7. (Currently amended) [[A]] The method according to ~~any one of claims 1 to 6, characterized in that the method further comprises~~ claim 1, further comprising the steps of:

calculating a signal strength indicator for the transposed window a number of times;

calculating a filtered signal strength indicator from said number of calculated signal strength indicators; and

using said filtered signal strength indicator as the signal strength indicator calculated for the transposed window.

8. (Currently amended) [[A]] The method according to ~~any one of claims1 characterized in that the method further comprises~~ claim 1, further comprising the steps of:

calculating a center of gravity for said previously calculated delay profile; and

positioning the search window (W_0) around said calculated center of gravity.

9. (Currently amended) [[A]] The method according to ~~any one of claims 1 to 8, characterized in that~~ claim 1, wherein the multipath components calculated for said transposed window are considered as already estimated in said step of searching at regular time intervals for new multipath components that are not already estimated from one of said delay profiles.

10. (Currently amended) [[A]] The method according to ~~any one of claims 1 to 9, characterized in that said~~ claim 1, wherein the digital wireless communications system is a Wideband Code Division Multiple Access system.

11. (Currently amended) [[A]] The method according to claim 10, ~~characterized in that said~~ wherein the identification code is a scrambling code for a Common Pilot Channel in said Wideband Code Division Multiple Access system.

12. (Currently amended) A receiver ~~having means (11, 12, 13, 14) for detecting~~ adapted to detect multipath components in time-varying fading radio channels ~~(3, 4, 6)~~ in a digital wireless communications system in which individual multipath components of a signal transmitted through a channel are received with individual delays (τ_a, τ_b, τ_c) within a range of possible delay values, and in which signals transmitted through a given channel comprise an identification code identifying that channel, ~~the receiver being adapted to~~ comprising:

~~calculate~~ a means for calculating repetitively for each of a number of known channels a delay profile indicating a magnitude (Y) for each of a number of individual delay values in a search window constituting a subset of said range of possible delay values and being positioned based on at least one previously calculated delay profile for the corresponding channel;

~~estimate~~ a means for accepting said delay profiles and estimating from said delay profiles the delays of multipath components for each known channel[[;]] and ~~calculate~~ calculating from said delay profiles a signal strength indicator for each known channel; ~~and~~

~~search~~ a means for searching at regular time intervals for new multipath components that are not already estimated from one of said delay profiles[[,]];

~~characterized in that the receiver is further adapted to:~~

~~compare~~ a means for comparing, when a new multipath component is found, the identification code of the new multipath component to the identification codes of said known channels; and

~~calculate~~ a means for calculating, if the identification code of the new multipath component is identical to the identification code of one of the known channels, a delay profile and a corresponding signal strength indicator for a transposed window obtained by transposing the search window of that known channel to include said new multipath component.

13. (Currently amended) [[A]] The receiver according to claim 12, ~~characterized in that the receiver is further adapted to replace~~ further comprising a

means of replacing the signal strength indicator calculated for [[that]] the known channel by the signal strength indicator calculated for the transposed window.

14. (Currently amended) [[A]] The receiver according to claim 13, ~~characterized in that the receiver is further adapted to replace~~ further comprising means for replacing the search window for [[that]] the known channel by the transposed window.

15. (Currently amended) [[A]] The receiver according to claim 12, ~~characterized in that the receiver is further adapted to~~ further comprising:

~~compare~~ means for comparing the signal strength indicator calculated for that known channel to the signal strength indicator calculated for the transposed window, and

~~replace~~ means for replacing, if the signal strength indicator calculated for the transposed window is larger than the signal strength indicator calculated for that known channel multiplied by a factor, the signal strength indicator for that known channel by the signal strength indicator for the transposed window.

16. (Currently amended) [[A]] The receiver according to claim 15, ~~characterized in that said~~ wherein the factor equals one.

17. (Currently amended) [[A]] The receiver according to claim 15 ~~or 16, characterized in that the receiver is further adapted to replace~~ further comprising a means for replacing, if the signal strength indicator for that known channel is replaced by the signal strength indicator for the transposed window, the search window for [[that]] the known channel by the transposed window.

18. (Currently amended) [[A]] The receiver according to ~~any one of claims 12 to 17, characterized in that the receiver is further adapted to~~ claim 12, further comprising:

~~calculate~~ means for calculating a signal strength indicator for the transposed window a number of times;

~~calculate~~ means for calculating a filtered signal strength indicator from said number of calculated signal strength indicators; and

[[use]] means for using said filtered signal strength indicator as the signal strength indicator calculated for the transposed window.

19. (Currently amended) [[A]] The receiver according to ~~any one of claims 12 to 18, characterized in that the receiver is further adapted to:~~ claim 18, further comprising:

~~calculate~~ means for calculating a center of gravity for said previously calculated delay profile; and

~~position~~ means for positioning the search window (W_0) around said calculated center of gravity.

20. (Currently amended) [[A]] The receiver according to ~~any one of claims 12 to 19, characterized in that the receiver is further adapted to consider~~ claim 19, further comprising means for treating multipath components calculated for said transposed window as already estimated when searching at regular time intervals for new multipath components that are not already estimated from one of said delay profiles.

21. (Currently amended) [[A]] The receiver according to ~~any one of claims 12 to 20, characterized in that said digital wireless communications system is~~ claim 20, as implemented in a Wideband Code Division Multiple Access system.

22. (Currently amended) [[A]] The receiver according to claim 21, ~~characterized in that said~~ wherein the identification code is a scrambling code for a Common Pilot Channel in said Wideband Code Division Multiple Access system.

23. (Currently amended) [[A]] The method of claim 1 wherein said steps are implemented using a computer program comprising program code means ~~for~~

performing the steps of any one of the claims 1 to 11 when said computer program is adapted to be run on a computer.

24.   (Currently amended) [[A]] The method of claim 23 wherein the computer program is stored on a computer readable medium having stored thereon program code means for performing the method of any one of the claims 1 to 11 when said program code means is run on adapted to be read and processed by a computer.